

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Canceled)
2. (Currently Amended) The control apparatus according to ~~claim 1~~ claim 19, wherein the switching element is placed in the switching circuit so that the current flowing through the field winding when the current is supplied to the storage means is the same in a current flowing direction as the current flowing through the field winding when the power supplying means provides the field winding with current.
3. - 8. (Canceled)
9. (Currently Amended) The control apparatus according to ~~claim 8~~ claim 20, wherein the on/off control unit is configured to turn off both of the third and fourth switches when the current flowing through the field winding under the off-state of both of the first and second switches becomes zero.
10. (Currently Amended) The control apparatus according to ~~claim 8~~ claim 20, wherein the on/off control unit is configured to turn on and off both of the first and second switches at intervals of time less than 1/10 of a time constant of the field winding.
11. (Canceled)
12. (Currently Amended) The ~~on-vehicle power supply system~~ control apparatus according to ~~claim 18~~ claim 23, wherein the switching element is placed in the switching circuit so that the current flowing through the field winding when the current is supplied to the battery is the same in a current flowing direction as the current flowing through the field winding when the battery provides the field winding with the current.
13. - 14. (Canceled)

15. (Currently Amended) ~~The on-vehicle power supply system control apparatus~~ according to ~~claim 14~~ claim 24, wherein the on/off control unit is configured to turn off both of the third and fourth switches when the current flowing through the field winding under the off-state of both of the first and second switches becomes zero.

16. (Currently Amended) The control apparatus according to ~~claim 14~~ claim 24, wherein the on/off control unit is configured to turn on and off both of the first and second switches at intervals of time less than 1/10 of a time constant of the field winding.

17. - 18. (Canceled)

19. (New) A control apparatus for use with an on-vehicle generator provided with a stator winding and a field winding and driven to rotate by an on-vehicle engine, the control apparatus comprising:

single power supplying means having positive and negative terminals, being directly connected to an output terminal of the generator, and providing current to the field winding for excitation thereof, the field winding having two terminals;

chargeable storage means having positive and negative pole terminals and being directly connected to the output terminal of the generator;

a switching circuit having a switching element configured to be turned on and off and to selectably and electrically connect or disconnect a current path between the field winding and the output terminal, the switching element including a first switch placed, through the output terminal, to connect one terminal of the field winding and the positive terminal of the power supplying means and a second switch placed to connect the other terminal of the field winding and the negative terminal of the power supplying means; and

a regeneration circuit providing, through the output terminal, the storage means with the current flowing through the field winding depending on magnetic energy preserved in the field winding when the switching element is turned off, wherein the

regeneration circuit includes a first diode placed to connect the one terminal of the field winding and the negative pole terminal of the storage means and a second diode placed, through the output terminal, to connect to the other terminal of the field winding and the positive pole terminal of the storage means.

20. (New) A control apparatus for use with an on-vehicle generator provided with a stator winding and a field winding and driven to rotate by an on-vehicle engine, the control apparatus comprising:

single power supplying means having positive and negative terminals, being directly connected to an output terminal of the generator, and providing current to the field winding for excitation thereof, the field winding having two terminals;

chargeable storage means having positive and negative pole terminals and being directly connected to the output terminal of the generator;

a switching circuit having a switching element configured to be turned on and off and to selectably and electrically connect or disconnect a current path between the field winding and the output terminal, the switching element including a first switch placed, through the output terminal, to connect one terminal of the field winding and the positive terminal of the power supplying means and a second switch placed to connect the other terminal of the field winding and the negative terminal of the power supplying means;

a regeneration circuit providing, through the output terminal, the storage means with the current flowing through the field winding depending on magnetic energy preserved in the field winding when the switching element is turned off, wherein the regeneration circuit includes a third switch placed to connect the one terminal of the field winding and the negative pole terminal of the storage means and a fourth switch placed, through the output terminal, to connect to the other terminal of the field winding and the positive pole terminal of the storage means; and

an on/off control unit bringing each of the third and fourth switches into an off-state when each of the first and second switches are in an on-state and bringing each of the third and fourth switches into an on-state when each of the first and second switches are in an off-state.

21. (New) The control apparatus according to claims 20, wherein the switching element is placed in the switching circuit so that the current flowing through the field winding when the current is supplied to the storage means is the same in a current a current flowing direction as the current flowing through the field winding when the power supplying means provides the field winding with the current.

22. (New) The control apparatus according to claim 9, wherein the on/off control unit is configured to turn on and off both of the first and second switches at intervals of time less than $1/10$ of a time constant of the field winding.

23. (New) A control apparatus for use with an on-vehicle generator provided with a stator winding and a field winding and driven to rotate by an on-vehicle engine, the control apparatus comprising:

a single battery serving as both of power supplying means providing current to the field winding for excitation thereof and storage means that is chargeable, the field winding having two terminals, the battery having positive and negative terminals and being directly connected to an output terminal of the generator;

a switching circuit having a switching element configured to be turned on and off to selectably and electrically connect or disconnect a current path between the field winding and the output terminal, the switching element including a first switch placed, through the output terminal, to connect one terminal of the field winding and the positive terminal of the battery and a second switch placed to connect the other terminal of the field winding and the negative terminal of the battery; and

a regeneration circuit providing, through the output terminal, the storage means with the current flowing through the field winding depending on magnetic energy preserved in the field winding when the switching element is turned off, wherein the regeneration circuit includes a first diode placed to connect the one terminal of the field winding and the negative terminal of the battery and a second diode placed, through the output terminal, to connect the other terminal of the field winding and the positive terminal of the battery.

24. (New) A control apparatus for use with an on-vehicle generator provided with a stator winding and a field winding and driven to rotate by an on-vehicle engine, the control apparatus comprising:

a single battery serving as both of power supplying means providing current to the field winding for excitation thereof and storage means that is chargeable, the field winding having two terminals, the battery having positive and negative terminals and being directly connected to an output terminal of the generator;

a switching circuit having a switching element configured to be turned on and off to selectably and electrically connect or disconnect a current path between the field winding and the output terminal, the switching element including a first switch placed, through the output terminal, to connect one terminal of the field winding and the positive terminal of the battery and a second switch placed to connect the other terminal of the field winding and the negative terminal of the battery;

a regeneration circuit providing, through the output terminal, the storage means with the current flowing through the field winding depending on magnetic energy preserved in the field winding when the switching element is turned off, wherein the regeneration circuit includes a third switch placed to connect the one terminal of the field winding and the negative terminal of the battery and a fourth switch placed, through the

output terminal, to connect the other terminal of the field winding and the positive terminal of the battery; and

an on/off control unit bringing each of the third and fourth switches into an off-state when each of the first and second switches are in an on-state and bringing each of the third and fourth switches into an on-state when each of the first and second switches are in an off-state.

25. (New) The control apparatus according to claim 24, wherein the switching element is placed in the switching circuit so that the current flowing through the field winding when the current is supplied to the battery is the same in a current flowing direction as the current flowing through the field winding when the battery provides the field winding with the current.

26. (New) The control apparatus according to claim 15, wherein the on/off control unit is configured to turn on and off both of the first and second switches at intervals of time less than $1/10$ of a time constant of the field winding.